

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Swarn S. Kalsi
Serial No. : 09/371,692
Appeal No. : 2005-0145
Filed : August 10, 1999
Title : SUPERCONDUCTING ELECTRIC MOTOR

Art Unit : 2834
Examiner : G. Perez

BOARD OF PATENT APPEALS
AND INTERFERENCES

2004 NOV 17 PM 4:12

RECEIVED

Board of Patent Appeals and Interferences
U.S. Patent and Trademark Office
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO DOCKETING REMINDER

In response to the Docketing Notice mailed on November 8, 2004, Applicant draws attention to the filing of a reply brief on March 12, 2003 and a request for oral hearing on March 12, 2003.

Enclosed, for the Board's convenience is a copy of the reply brief and the request for oral hearing, showing the certificate of mailing. Also enclosed is a copy of the postcard date stamped by the PTO.

Applicant looks forward to consideration of the arguments set forth in the reply and to an opportunity to address the Board in the oral hearing.

No additional fees are believed to be due in connection with the filing of this response. However, to the extent fees are due, or if a refund is forthcoming, please adjust our deposit account 06-1050, referencing attorney docket "05770-082001."

Respectfully submitted,

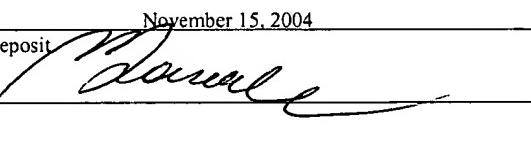
Date: November 15, 2004



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906
20974507.doc

CERTIFICATE OF MAILING BY FIRST CLASS MAIL
I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

November 15, 2004
Date of Deposit 
Signature

Irja Zarembok
Typed or Printed Name of Person Signing Certificate

Paid Date = 03/26/2003
Account Number = 80071123
Check Number = 160253
Check Amount = \$280.00

FISH & RICHARDSON P.C.

215 Franklin Street
Boston, Massachusetts
01110-2804

C 160253

PAY ~~160 1110 2305 0879 170 3513 4205 08~~ DOLLARS.

TO THE ORDER OF ~~070262830 05 5381 2203 032603~~

COMMISSIONER OF PATENTS AND TRADEMARKS

DATE / AMOUNT

3/13/03 280.00

FISH & RICHARDSON P.C.

52-153/112

Fleet Fleet Maine, N.A.
www.fleet.com
South Portland, ME

160253 1011201539C 80 071 123P 00000028000P

PTLH PWD 14150000 OFFICE
03-20-2001 0001
11-07-01 TO 08-01

0110-0001-5
070262830 0110-0001-5
070262830 03-26-03

17010000 1ST MIX
230570607 0520-0027-8
23Q570607 03-26-03

FLEET
1299 682 2 28 03262003
2801183889

0025 64741

MR 25/03

►0560011184
FIRST VIRGINIA BANK
63252003 FALLS CHURCH, VA

01827400

RECEIVED
200 NOV 17 PM 4:12
BOARD OF PATENT APPEALS
AND INTERFERENCES

Attorney's Docket No. 03770-082001	Express Mail Label No.	Mailing Date March 12, 2003	For PTO Use Only <i>Do Not Mark in This Area</i>
Application No. 09/371,692	Filing Date August 10, 1999	Attorney/Secretary Init FRO/FAL/cfo	
Title of the Invention SUPERCONDUCTING ELECTRIC MOTOR			
Applicant Swarn S. Kalsi			
Enclosures · Reply Brief (4 pages) · Other: Request for Oral Hearing (1 page) A Check for \$280.00			BOARD OF PATENT APPEALS AND INTERFERENCES
			2003 MAR 19 AM 10:34
			RECEIVED

FR FISH RICHARDSON P.C.

225 Franklin Street
Boston, Massachusetts
02110-2804

160253

PAY

DOLLARS

TO THE ORDER OF

COMMISSIONER OF PATENTS AND TRADEMARKS

DATE

AMOUNT

3/12/03 \$280.-

FISH & RICHARDSON P.C.

52-153/112



Fleet Maine, N.A.
www.fleet.com
South Portland, ME

BY

RJ/KL

05770-082001/CFO

160253 1011201539 80 071 123

Attorney's Docket No. 05770-082001	Express Mail Label No.	Mailing Date March 12, 2003	For PTO Use Only <i>Do Not Mark in This Area</i>
Application No. 09/371,692	Filing Date August 10, 1999	Attorney/Secretary Init FRO/FAL/cfo	
Title of the Invention SUPERCONDUCTING ELECTRIC MOTOR			
Applicant Swarn S. Kalsi			
Enclosures ·Reply Brief (4 pages) ·Other: Request for Oral Hearing (1 page) A Check for \$280.00			

RECEIVED
2004 NOV 17 PM 4:12
BOARD OF PATENT APPEALS
AND INTERFERENCES

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Swarn S. Kalsi

Art Unit : 2834

Serial No. : 09/371,692

Examiner : G. Perez

Filed : August 10, 1999

Title : SUPERCONDUCTING ELECTRIC MOTOR

BOARD OF PATENT APPEALS
AND INTERFERENCESRECEIVED
2001 NOV 17 PM 4:12**BOX AF**Commissioner for Patents
Washington, D.C. 20231**REPLY BRIEF**

Pursuant to 37 CFR 1.193(b)(1), Applicant responds to the new points raised in the Examiner's Answer as follows.

A STACK OF DISKS IS NOT A WINDING

On page 12 of the Answer, the Examiner correctly points out that windings need not be wire. While this may be true, it does not change the fact that *Rabinowitz* teaches a rotor having a stack of three superconducting disks.¹ A stack of superconducting disks does not form a "superconducting winding" any more than a stack of pennies forms a copper winding.

On page 11 of the Answer, the Examiner suggests that although *Rabinowitz* ruled out a rotor having "wire-shaped" windings, he did not, in so doing, rule out the possibility of a rotor with other types of windings.

There are at least three difficulties with this point of view:

1. It fails to account for the *Rabinowitz* statement that "the motor/generator has *only* a primary set of windings"²; and

¹ See FIG. 1 and FIG. 2, *Rabinowitz*, col. 7, lines 4-7 ("Although rotor 11 can contain as little as a single layer of superconducting material, in order to increase the amount of superconducting material in the rotor, it is preferred to have several layers 12.") Applicant uses the word "stack" despite its vertical connotation since, in any event, there is no external reference frame in the figures to define which way is up.

² *Rabinowitz*, col. 5, lines 58-60 ("[b]ecause this motor/generator has *only* a primary set of windings, it is simpler in some ways than most motor/generators.").

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

3/12/2003

Date of Deposit

Carla F. Oedile

Signature

Carla F. Oedile

Typed or Printed Name of Person Signing Certificate

2. It fails to explain why FIGS. 1-8 show rotors with superconducting disks, rather than rotors having "non wire-shaped" windings.³
3. It fails to account for the absence of any discussion, in what should be an enabling disclosure, of these "non wire-shaped" windings.

In Applicant's view, the cited passage⁴ is simply one in which Rabinowitz draws attention to an advantage of his motor. Rabinowitz is pointing out that because his rotor is made by placing superconducting *disks* adjacent to each other, he can use any superconducting material at all. He is no longer restricted to choosing superconducting materials that can be formed into an elongated structure (i.e. wire, foil, thin film, tape) that is later wound into a winding. He avoids this restriction by avoiding windings altogether.

Unlike the Examiner's interpretation, Applicant's proposed interpretation of this passage offers the advantage of being consistent with points 1-3 above.

It is apparent that *Rabinowitz* teaches a rotor having superconducting disks. These superconducting disks cannot reasonably be characterized, either individually or collectively, as a winding. Accordingly, *Rabinowitz* lacks any teaching or suggestion of a rotor having a superconducting winding, as recited in the pending claims.

A SQUIRREL CAGE IS NOT A WINDING

On page 15 of the Answer, The Examiner correctly points out that a magnetic field will induce loops of current on a squirrel cage. It is, of course, well known that a magnetic field will induce loops of current in any metal structure that it encounters. This does not, however, make all metal structures into "windings."

The squirrel cage is not a winding at all. It is essentially a wire mesh, topologically no different from a tin can that has had long strips cut out from one end to the other to form the bars of a cage.

³ FIG. 9 illustrates a special case in which the superconducting material is on the stator instead of the rotor. The rotor windings in this case are conventional windings, not superconducting windings.

⁴ *Rabinowitz* at col. 5, line 66 to col. 6, line 3, ("Because it is in a non-wire form, instead of one or more windings of wire, the motor/generator can be implemented with substantially any superconducting material, including those that are too brittle to be easily and/or cost effectively formed into superconducting wires.")

As the Examiner suggests on page 15, paragraph 2, in a squirrel cage, it is possible for current to flow in a closed loop. The Examiner apparently recognizes that in a squirrel cage, current can flow across one bar 4, down one end ring 5, back across another bar, and then up the other end ring to its starting point. The Examiner appears to suggest that the current loop defined by these two bars and the end rings form one turn of a "winding." Under this scheme, the squirrel cage would become a "winding" that consists of many circumferentially offset current loops, all joined together at two endpoints (i.e. the end rings).

However, a structure does not become a "winding" simply because it is possible to trace out a closed path for current flow. In virtually all electrical circuits, it is possible to identify numerous closed loops through which current can flow. However, it would stretch credulity to characterize each loop in an electric circuit as a "winding."

A "winding" refers to an elongated conductor formed into a coil having two or more "turns." The turns collectively define a core of the winding. Current flowing in the conductor generates (as does any current) a magnetic field whose field lines enclose the current. In a winding, the conductor guides current so that the field lines from current in each turn of the winding are funneled through the winding's core. As a result, the magnetic field in the core becomes quite high. This is why, for example, windings, and not a squirrel cages, are used to make electromagnets.

The use of the term "winding" for the structure shown in *Higashi* runs afoul of the Examiner's own definition of a winding.⁵ The Examiner quotes a dictionary that defines a winding as "one complete turn of something wound." In the case of the *Higashi* squirrel cage, it is unclear precisely what is being wound? Certainly, it cannot be the superconducting material. It is clear from the figures that the superconducting material 13 extends only as far as the end rings 5. Since it is plain from the figures that the superconducting material is not wound, *Higashi* cannot possibly teach a superconducting winding.

⁵ Examiner's Answer, page 15, last paragraph.

Applicant : Swarn S. Kalsi
Serial No. : 09/371,692
Filed : August 10, 1999
Page : 4

Attorney's Docket No. 05770-082001

These difficult questions are avoided by recognizing that a squirrel cage is fundamentally different from a winding, and that what *Higashi* teaches is a squirrel cage, and not a winding.

SUMMARY

For reasons set forth above and in the Appeal Brief, it is apparent that neither *Higashi* nor *Rabinowitz* teaches a rotor with a superconducting winding. As a result, the combination of *Higashi* and *Rabinowitz* also lacks a teaching or suggestion of a rotor having a superconducting winding. For these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the final rejection should be reversed.

No additional fees are believed to be due in connection with the filing of this rebuttal brief. However, to the extent that a fee is due, or if a refund is forthcoming, please adjust our Deposit Account No. 06-1050, referencing attorney docket number "05770-082001."

Respectfully submitted,

Date: March 12, 2003



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, Massachusetts 02110-2804
Telephone: (617) 542-5070,
Facsimile: (617) 542-8906